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circuit for a memory and the buzzer through contact plates 24 and 25 connected to a circuit on the substrate. The battery is a storage battery charged at the same time as the charging of the main battery, and provided as a backup battery or a source for the buzzer.

In the prior art, since the battery and the buzzer are independently disposed, it is necessary to form a space on the substrate for mounting the battery, resulting in increasing of the size of the substrate and hence the size of the portable communication device.

Furthermore, the buzzer 21 and the case 23 for the battery 22 are manufactured in separate manufacturing processes, which causes the manufacturing and assembling costs to increase.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a sound generator having a battery which may be decreased in size and manufactured at a low cost.

According to the present invention, there is provided a sound generator for a portable device comprising, a case, a sound generating device mounted on the case, a battery mounted in the case, terminals provided on the case, a pair of leads connecting a pair of electrodes of the battery with the terminals.

The case has a recess on an outside wall thereof, and the sound generating device is mounted in the recess.

Each of the leads comprises a resilient contact plate contacted with the corresponding electrode.

The sound generating device may be a buzzer.

The battery has an upper electrode and lower electrode.

5 The terminals comprise a pair of terminals for applying a voltage of the battery to a control circuit, and a pair of terminals for applying a voltage from the control circuit to the buzzer for operating it.

The battery is held by the contact plate engaged with
10 the upper electrodes.

The contact plate holding the battery is offset.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a plan view of a sound generator according
15 to the present invention;

Fig. 2 is a sectional side view of the sound generator;

Fig. 3 shows the underside of the sound generator;

Fig. 4 is a perspective view;

Fig. 5 is an explode perspective view;

20 Figs. 6 is perspective view showing a modification of
terminals; and

Figs. 7 is a perspective view of a conventional sound generator.

25 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figs. 1 and 2, a sound generator 1 according to the present invention comprises a case 2 made of plastic, a buzzer 3 mounted in the case 2, and a disc type

Furthermore, the case 2 has a sound discharge hole 16.

The sound generator 1 is mounted on a printed circuit (not shown). The terminals 12, 13, 14 and 15 are connected to corresponding terminals of the control circuit, thereby applying a voltage to the control circuit from the battery 8 through the contact plates 10 and 11 and terminals 12 and 13. A control signal is applied to the buzzer 3 from the control circuit through the terminals 14 and 15, so that a buzzing sound emanates from the sound discharge hole 16.

10 Although the contact plates 10 and 11 and the terminals
12 and 13 are separately made, each couple the contact plate
10 and terminal 12, and contact plate 11 and terminal 13 may
be made by a single plate.

Fig. 6 is a perspective view showing a modification of the device. Lead wires 17 and 18 are vertically connected to the terminals 12 through 15. The wires are inserted in corresponding holes formed in a circuit board and bent on the underside of the circuit board, thereby connecting each terminal with a corresponding terminal of the circuit.

20 In accordance with the present invention, the battery is attached to the case of the sound generation. Therefore, the battery and the sound generator can be assembled in a small size. Since it is not necessary to manufacture a housing for mounting the battery, the manufacturing cost is
25 reduced.